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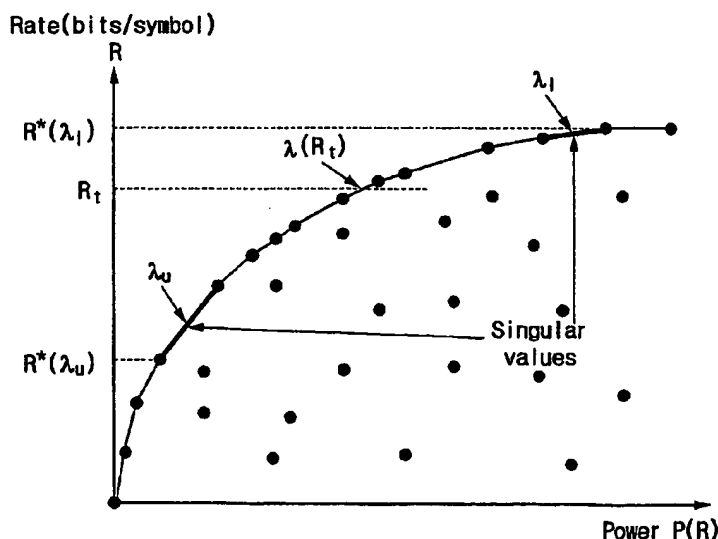
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(54) Title: AN APPARATUS FOR ADAPTIVE RESOURCE ALLOCATION FOR MULTI-CHANNEL COMMUNICATION SYSTEM, AND A METHOD THEREOF



(57) **Abstract:** Disclosed is an adaptive resource allocation processor in the multi-channel communication system. A channel gain for the subchannel is determined and a modulation method for each subchannel is the present invention. A number of bits to be transmitted is determined according to a subchannel quality, and a minimum power for a total required transmission rate is determined. A channel gain for the subchannel is determined according to the number of allocated bits and power, and, a modulation method for each subchannel is determined with reference to the channel gain. When the modulation method for each subchannel is determined, an adaptive convex search is repeatedly performed according to the average power and transmission rate, and a final modulation method is determined as one subchannel unit with reference to the convex search result.

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